REMARKS

After entry of this Amendment, claims 2-4, 6, 8, 12-17, 31-34, 36, and 38-40 are pending in the instant application. Claims 18-27, 30, and 35 were previously withdrawn pursuant to the Applicant's claim election. Claims 1, 5, 7, 9-11, 28 and 29 were previously cancelled.

Claims 19, 23, 30, 35, and 37 are cancelled in this Amendment. Claims 6, 14, and 32-34 are amended to correct claim dependency and to depend from independent claim 36 which is herein amended to incorporate the limitations of previously pending claim 37. Independent claim 18 is also amended to incorporate the limitations of previously pending claim 37. Previously withdrawn claims 20-22 and 24-27 are amended to clarify claim terminology to be consistent with amended claim 18. Claims 39 and 40 are added and find support in at least paragraphs [0011]-[0014] and [0041] which describe replacement (and thus elimination) of EVA. Accordingly, no new matter is added in this Amendment.

Claim Rejections – 35 U.S.C. §112 ¶1 and ¶2:

The Examiner rejects previously pending claim 37 under 35 U.S.C. §112 ¶1. The Examiner also rejects claims 6, 8, 14-17, 32, 33, and 37 under 35 U.S.C. §112 ¶2. Although claim 37 is herein cancelled, the limitations of claim 37 have been amended into independent claims 18 and 36. Accordingly, the Applicant still addresses the pending §112 rejections.

35 U.S.C. §112 ¶1 Rejection:

The first paragraph of 35 U.S.C. §112 requires that the "specification shall contain a written description of the invention."[1] To satisfy this requirement, the specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that

[1] See also MPEP §2163

the inventor had possession of the claimed invention.[2] If the Applicant amends or adds claims and points out the appropriate support in the specification, then the Examiner has the burden of presenting evidence or reasoning to explain why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims.[3]

The final limitation in claim 37, which reads "wherein said first and second liquid diorganopolysiloxanes, silicone resins, cross-linking agents, and hydrosilylation catalysts may be the same or different from each other, respectively," is rejected by the Examiner because the Examiner contends that this limitation is not described in the specification and is, thus, "new matter." In the previously filed Amendment (filed on January 19, 2010) the Applicant cited numerous paragraphs in the specification that support this limitation and claim 37 as a whole. At that point, the burden shifted to the Examiner to explain why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. The Examiner failed to include this explanation in the Office Action. Accordingly, the Applicant disagrees with the Examiner's rejection both procedurally, and more importantly, substantively.

To the extent that the Examiner is not convinced that there is *in haec verba* or *ipsis verbis* support for aforementioned limitation, the Applicant emphasizes to the Examiner that appellate courts before the CAFC (e.g. the CCPA), and even the CAFC itself, have held that the subject matter of the claims does not have to be described literally (*in haec verba*)[4] or word for word (*ipsis verbis*)[5]. Rather, the specification need only convey to persons of skill in the art that the inventor had *possession* of the subject matter in question at the time of filing.[6] This makes it unnecessary to spell out every detail of the invention in the specification. The Applicant

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[2] See, e.g., *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116; See also MPEP §2163
[3] See also MPEP §§2163, 2164
[4] *In re Lukach*, 442 F.2d 967, 969 USPQ 795 (CCPA 1971)
[5] Fujikawa v. Wattanasin, 93 F.3d 1559, 1570 (Fed. Cir. 1996)
[6] *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 68 (1998); MPEP §2163

respectfully submits that, in this case, the Applicant has provided more than enough support for each and every limitation of claim 37. The Applicant again emphasizes to the Examiner that at least paragraphs [0046] and [0047] describe that the components of the adhesive (e.g. the first liquid diorganopolysiloxane, first silicone resin, etc.) may be the same or different from the components of the silicone encapsulant. In addition, at least paragraphs [0023] and [0026] of the specification describe that, for example, Components (A) and (C) may include one or more compounds or combinations of compounds. Clearly, these paragraphs provide sufficient support to claim that multiple compounds may be utilized and that those compounds may be the same or different from each other. Accordingly, the Applicant once again requests that the claim rejections be withdrawn.

As an aside, if the Examiner maintains this rejection, the Applicant respectfully submits that the subsequent Office Action cannot be properly made final because of the deficiency of this rejection and the lack of explanation, in the current Office Action, *why* persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims.

35 U.S.C. §112 ¶2 Rejection:

The Examiner rejects claims 6, 8, 14-17, 32, 33, and 37 under 35 U.S.C. §112 ¶2 for being indefinite. The Examiner contends that the first and second cross-linking agents cannot be the same because the claims require differing molar ratios of silicon-bonded hydrogen atoms (Si-H) to silicon-bonded alkenyl groups (Si-C=C). However, the chemical identities of the first and second cross-linking agents are not determinative of the molar ratios Si-H and Si-C=C. In other words, the required molar ratios can still be achieved even if the first and second cross-linking agents are the same. The molar ratios can be determined by the amounts of the first and second cross-linking agents that are used and not (solely) by their chemical identities. In fact, the claims

themselves positively recite the limitation "…in an *amount* such that the ratio…" (emphasis added).

For example, the first and second cross-linking agents may be identical and yet may be used in differing molar *amounts* such that the ratios of Si-H and Si-C=C are different. In this scenario, the claim is still satisfied even though the first and second cross-linking agents are the same compound. Alternatively, and as envisioned by the Examiner, the first and second cross-linking agents may be different compounds and may be used in amounts such that the claim is still satisfied. For these reasons, the Applicant respectfully submits that the claims are definite and requests that the 35 U.S.C. §112 ¶2 rejections be withdrawn.

Claim Rejections – 35 U.S.C. §103:

The Examiner rejects claims 2-4, 6, 8, 12-17, 31-34, and 36-38 as obvious over U.S. Pat. No. 6,175,075 to Shiotsuka et al. in view of U.S. Pat. No. 5,569,689 to Stein. In so doing, the Examiner cites the '075 patent for its teachings regarding the "architecture" of solar cell modules and disclosure of a superstrate, a silicone adhesive, and one or more solar cells. However, the Examiner admits that the '075 patent is deficient in that it is silent regarding the viscosity and specific components of the claimed silicone adhesive. To correct these deficiencies, the Examiner combines the '075 patent with the '689 patent and concludes that the combination teaches each and every element of the claims. The Applicant respectfully disagrees with the Examiner's conclusion of obviousness. The Applicant goes further and also respectfully submits that the instant invention provides both superior and unexpected results from the perspective of one of skill in the art.

Differences Between the Claimed Invention and the Combined Teachings of the Art:

As the Examiner will appreciate, the art focuses on use of hot-melt resin materials such as EVA, EMA, EEA, etc. in solar cells. (See at least Col. 16, Lines 2-10, 11-21, and 60-67, and Col. 19, Lines 11-19 of the '075 patent). In fact, in Col. 16, the 075 patent specifically states that "…EVA is *particularly preferable* because it exhibits well-balanced properties when used in a solar cell module" (emphasis added). To go even further, in Col. 16, Lines 11-21, the patentees of the '075 continue to extol the benefits of EVA. Even more so, the patentees continue to describe the use and benefits of EVA in throughout the detailed description, in the Examples (see, for example, Col. 24, Lines 43-62; Col. 25, Lines 9-17). The patentees even refer to the "good" results achieved using EVA (see Col. 28, Lines 63-64).

In the instant background, detailed description, and throughout the Examples, the inventors state quite clearly that EVA is preferably eliminated from use in solar cell modules and performs poorly in various tests (as evidenced in the Examples). Accordingly, one of the goals of the instant invention is to replace EVA. Thus, the focus of the art on EVA is very different from, and contrary to, the goals and results achieved by the instant invention. It is even reasonable to assert that the focus on EVA in the art in an effective "teaching away" from the instant invention because those of skill in the art recognize that EVA is a mainstay in solar cell module development. It is precisely for these reasons that the instant invention is non-obvious and is actually superior to what is taught in the art and to what would be expected by those of skill in the art.

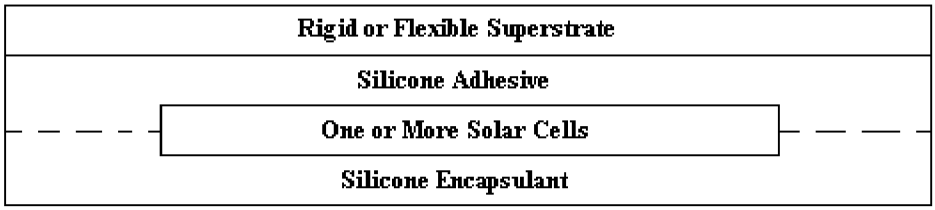
Description of Superior and Unexpected Results of this Invention:

Independent from the arguments above and from any use or requirement of EVA in the prior art teachings, the claimed invention still exhibits results that are both superior and

unexpected over the art. Quite simply, the particularly claimed components and compounds required in the claims are not random, obvious, or predictable. In fact, these claimed components and compounds have been developed for particular (but non-limiting) purposes. For example, the silicone adhesive utilizes a particular weight amount of compounds and a particular default molar ratio (i.e. a molar ratio of 1:1 or less) of silicon-bonded hydrogen atoms to silicon-bonded alkenyl groups to reduce reaction and curing of the adhesive and increase the softness and stickiness of the adhesive. This promotes maximum adhesion to both the superstrate and the one or more solar cells. In addition, the silicone adhesive has the particularly claimed viscosity so that, upon compression (e.g. "squeezing" of the solar cell and superstrate) air bubbles are pushed out of the adhesive and minimized. This increases the performance and efficiency of the solar cell modules. This surprising combination of stickiness and fluidity is unexpected and allows for a superior solar cell module to be formed.

The silicone encapsulant also utilizes a particular weight amount of compounds and a particular excess molar ratio (i.e., a molar ratio of greater than 1:1) of silicon-bonded hydrogen atoms to silicon-bonded alkenyl groups. This excess molar ratio promotes reaction and cure of the encapsulant to ensure that the encapsulant is hard and rigid (and not soft and sticky like the adhesive). The hardness and rigidity of the encapsulant allows the solar cell module to be formed with excellent physical strength and durability *without the need for extra reinforcing tie layers or backsheets such as EVA and other expensive substrates*. In fact, the chemistry of the silicone encapsulant starkly differentiates this invention from the solar cell module of the '075 patent and its use of EVA, as described in detail above. Quite simply, the chemistry of the instant invention allows for elimination of EVA saving both production times and costs and increasing performance of the solar cell module.

Referring back to the solar cell module as a whole, even though the adhesive and encapsulant provide excellent results independently from one another, these results would be of little use if the adhesive and encapsulant could not be effectively used together. In this invention, the claimed chemistry not only promotes the superior results described above but also promotes the adhesion and compatibility of the silicone adhesive and silicone encapsulant with one another. As just one non-limiting example, the solar cell module may have the structure illustrated below wherein the silicone adhesive and the silicone encapsulant effectively adhere to each other (at the dashed line):



The art cited by the Examiner does not disclose, teach, or even remotely suggest that the claimed chemistries are both complementary to each other and, at the same time, produce superior results as described above.

In addition to the benefits described above, the claimed invention also provides various physical and electrical advantages over what would otherwise be expected (and demonstrated) by the art.

The silicone composition prepared in Example 1 evidences superior and unexpectedly high percentages of ultraviolet and visible light transmittance (see also Table 1) as compared to compositions of the art. This maximizes the amount light reaching the solar cells that can be converted into electrical energy.

Example 2 evidences superior and unexpectedly high taber abrasion resistance in conjunction with light transmittance (see also Table 2) as compared to compositions of the art.

Example 3 evidences superior and unexpectedly high Shore A Hardness (see also Table 3) of various embodiments of this invention. This hardness strengthens the solar cell module and minimizes/eliminates the need for additional substrates or tie layers (such as EVA, as described above).

Example 4 evidences superior and unexpected adhesion of an additional embodiment of the invention after damp heating.

Examples 7-10 evidence superior and unexpected electrical capabilities of multiple embodiments after various testing procedures.

Examples 13-15 evidence superior and unexpected temperature, short circuit temperature, open circuit voltage, maximum voltage, maximum current intensity, fill factor, maximum power, thermal cycling, free cycling, and damp heat conditioning, test results associated with this invention as compared to standard modules of the art made with EVA/TEDLAR laminate technology (see also Tables 8-13). This further demonstrates the superiority of this invention as compared to embodiments utilizing EVA.

None of these physical, chemical, or electrical advantages, alone or in combination with each other, are disclosed, taught, suggested, or even remotely recognized by the art as associated with the particularly claimed chemistry of this invention. Accordingly, it is untenable to conclude that one of skill in the silicone-solar cell arts would obviously choose the particularly claimed chemistry that just happens to exhibit superior and unexpected results in the *numerous* physical, chemical, and electrical tests that are described above and in the specification. The selection of the claimed chemistry simply could not occur by chance or mere review of the prior art, even by those of high skill in the art. There are too many results that are both superior and unexpected to conclude that one of skill in the art would stumble upon this chemistry by chance.

Accordingly, it is very clear that the claimed invention is both novel and non-obvious over the art.

Supplemental Information Disclosure Statement:

The Applicant also concurrently files a Supplemental Information Disclosure Statement (IDS) to cite JP 2003-069068 and to provide the Examiner with a computer generated English translation. The Applicant respectfully submits that the claimed invention is both novel and non-obvious over the '068 reference.

Conclusion

In view of the above, the Applicant respectfully submits that the claim rejections under 35 U.S.C. §§ 112 and 103 are overcome and that all pending claims are both novel and non-obvious. Accordingly, the Applicant respectfully submits that all pending claims are in condition for allowance and respectfully requests such allowance.

While it is believed that no further fees are presently due, the Commissioner is authorized to charge the Deposit Account No. 08-2789, in the name of Howard & Howard Attorneys PLLC, for any fees or credit the account for any overpayment.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

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